

CLAIMS

1. An air conditioning device for a vehicle comprising:
 - a first compressor for air conditioning which is connected to an output shaft of an engine via a clutch;
 - a regenerative section for recovering kinetic energy of the vehicle during deceleration as electrical energy;
 - a battery section for storing electrical energy recovered by the regenerative section;
 - a second compressor for air conditioning which is driven by a motor using the recovered electrical energy; and
 - an air conditioning control section for controlling air conditioning which is adapted to disconnect the first compressor from the engine during deceleration of the vehicle by disengaging the clutch, and to make the second air compressor be used solely for air conditioning.
2. An air conditioning device as claimed in claim 1, further comprising:
 - an automatic stop-start engine control section for automatically stopping or starting the engine under predetermined conditions;
 - a priority determining section for determining which of an automatic stop-start control of the engine or an air conditioning operation is given priority; and
 - a desired air conditioning load determining section for determining a desired air conditioning load, and comparing the desired air conditioning load with a predetermined value,wherein the air conditioning control section is adapted to make the second

compressor be operated solely when the automatic stop-start control of the engine is given priority, and to make the first compressor also be operated, in addition to the second compressor, by engaging the clutch when the air conditioning operation is given priority, and the desired air conditioning load is greater than the predetermined value.

3. An air conditioning device as claimed in claim 2,

wherein the air conditioning control section is adapted to compare the efficiencies of the first and second compressors with each other when the air conditioning operation is given priority, when the desired air conditioning load is greater than the predetermined value, and when the desired air conditioning load is covered by operating either one of the first and second compressors, and

wherein the air conditioning control section is adapted to make the second compressor operate, and to disconnect the first compressor from the engine by disengaging the clutch when the efficiency of the second compressor is greater than that of the first compressor, and is adapted to make the first compressor be operated by the engine by engaging the clutch, and to make the second compressor stop when the efficiency of the second compressor is less than that of the first compressor.

4. An air conditioning device as claimed in claim 3,

wherein the air conditioning control section is adapted to disconnect the first compressor from the engine by disengaging the clutch, and to make the second compressor be operated when the efficiency of the second compressor is less than that of the first compressor, and when the regenerative section is recovering electrical energy.

5. An air conditioning device as claimed in claim 3,

wherein the regenerative section is adapted to selectively act as a driving motor for driving the vehicle, and is adapted to use the energy stored in the battery section when acting as the driving motor.

6. An air conditioning device as claimed in claim 2,
wherein the priority determining section comprises buttons which are operatable by an operator.